



DESCRIPTION OF A NEW SPECIES OF SERRANID FISH FROM WESTERN AUSTRALIA, WITH A KEY TO THE AUSTRALIAN SPECIES OF *ACANTHISTIUS*

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ABSTRACT

A new species of serranid fish *Acanthistius pardalotus*, is described from subtropical seas of Western Australia. It is distinguished from other Australian members of *Acanthistius* by its distinctive colour pattern and slight morphological differences. *A. serratus* (Cuvier) from south-western Australia and *A. ocellatus* (Günther) from eastern Australia, previously united under the former name, are here recognised as distinct species. A key is provided for the Australian species of the genus.

INTRODUCTION

The serranid genus *Acanthistius* Gill contains six marine species confined to Australasia, South America and Easter Island. The best known Australian member, *A. serratus* (Cuvier [in Cuvier & Valenciennes], 1828), has generally been considered a wide-ranging species. However, it is apparent that this name has served as a catch-all for Australian spotted serranids that possess 13 dorsal spines. Allen *et al.* (1976: 393) provisionally recognised *A. serratus* from Lord Howe Island but noted colour differences between specimens from the south-west of Australia (type locality of *A. serratus*) and its eastern coast. They stated that *A. ocellatus* (Günther, 1859) was the next available name for the eastern form, should it prove distinct. The present paper provides evidence that *A. serratus* and *A. ocellatus* are discrete species and describes a third closely related species from Western Australia as new.

Measurements were made with needle-point dial calipers to the nearest mm (to the nearest 0.1 mm for measurements less than 10 mm) and follow Katayama (1960) unless otherwise stated.

Type specimens have been deposited at the Australian Museum, Sydney (AMS), British Museum (Natural History), London (BMNH) and the Western Australian Museum, Perth (WAM).

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SYSTEMATICS

Key to the Australian species of *Acanthistius*

- 1a Body pale with 6 well defined dark cross bars, continued on dorsal and anal fins (Fig. 1a); head with 2 prominent dark bars radiating from posterior half of eye, the upper continued through eye to snout tip (Lord Howe and Norfolk Islands, Kermadec Islands, northern New Zealand and New South Wales) *A. cinctus* (Günther, 1859)
- 1b Body spotted, blotched, irregularly barred or markings absent, never with 6 prominent cross bars 2
- 2a Scales relatively large, 20-26 in diagonal row from upper origin of gill cover to base of first dorsal spine; usually 2-3 narrow dark bars radiate from posterior half of eye (Fig. 1b); head and body pale with leopard-like pattern of spots, blotches and lines, increasing in complexity with size (Western Australia) *A. pardalotus* sp. nov.
- 2b Scales relatively small, 26-35 in diagonal row from upper origin of gill cover to base of first dorsal spine; usually 2 broad dark bars radiate from posterior half of eye, or postorbital bars absent; body either spotted or non-spotted, or with a series of large pale blotches breaking up ground colour into a series of irregular dark cross bars 3
- 3a Head and body brown, covered with ocellated spots, the centres coloured blue in life (Fig. 1c); postorbital bars either indistinct or absent (Southern Queensland, New South Wales, eastern Victoria, northern Tasmania and Lord Howe Island) *A. ocellatus* (Günther, 1859)
- 3b Spots on head and body, when present, never ocellated; head with 2 broad postorbital bars and a few scattered dark brown spots (Fig. 1d), or spots absent; body colour variable, either brown with scattered dark brown spots (Fig. 1d), dark brown with several large whitish blotches (Fig. 1e) or with combination of both patterns (South Australia and Western Australia) *A. serratus* (Cuvier, 1828)

Note: in addition to the characters mentioned above for distinguishing *A. ocellatus* from *A. serratus* it is noteworthy that specimens of *A. ocellatus* as small as 30 mm SL possess prominent body spotting whereas juveniles of *A. serratus* are either unspotted or possess only a few spots on the upper sides. Furthermore, the postorbital bars are always prominent in the young of *A. serratus* and mostly indistinct in *A. ocellatus*.

Acanthistius pardalotus sp. nov.
(Figs 1b & 2; Table 1)

Holotype

WAM P.5113, 189 mm SL, collected with derris powder from rock pool at mouth of the Murchison River, Kalbarri (27°42'S, 114°12'E), Western Australia, by zoology students from the University of Western Australia, 14 October 1957.

Paratypes

Fifteen specimens from Western Australia, 62-370 mm SL (unless otherwise designated, all specimens at WAM): P.3784, 236 mm SL, City Beach (near Perth), F. Paxman, November 1954; P.4465, 184 mm SL, Mullaloo Beach (north of Perth), N. Cross, 3 July 1959; P.4502, 183 mm SL, north of Rottnest Island (off Fremantle), 36 m, N. Milward, November 1954; P.4791, 197 mm SL, Strickland Bay, Rottnest Island, zoology students, U.W.A., 20 March 1959; P.4792, 248 mm SL, Port Gregory (north of Geraldton), D. McKorkall, 20 August 1959; P.5577, 62 mm SL, Port Gregory, B.R. Wilson *et al.*, 26 December 1962; P.5777, 275 mm SL, Margaret River mouth (Prevelly Park, north of Cape Leeuwin), B. Burbidge, 2 June 1963; P.14532, 370 mm SL, Houtman Abrolhos, F. Barrett-Lennard, May 1952; P.14533, 163 mm SL, Point Quobba (north of Carnarvon), F. Barrett-Lennard, October 1959; P.16775, 265 mm SL, off Prevelly Park, F.J. McCann, 9 October 1968, P.26664-004, 277 mm SL, Steep Point, Shark Bay, by spear at 14 m, J.B. Hutchins, 11 April 1979; P.26825-001, 2 specimens, 94-118 mm SL, Salmon Bay, Rottnest Island, from rock pool with rotenone, J. Scott, 18 January 1976; AMS I.21432-001, 186 mm SL, Mullaloo Beach, G. Clohessy, March 1963; BMNH 1980.3.24.1, 191 mm SL, Burns Beach (north of Perth), G. Knight, 15 April 1963.

Diagnosis

This species is placed in the genus *Acanthistius* on the basis of the 13 dorsal fin spines and the large number of vertical scale rows above the lateral line (99 or more). Within *Acanthistius*, *A. pardalotus* is distinguished



Fig. 1: Comparison of colour patterns in life of *Acanthistius* (measurements are approximate standard lengths): a, *A. cinctus* (200 mm); b, *A. pardalotus* (230 mm); c, *A. ocellatus* (210 mm); d, *A. serratus*, spotted colour variety (270 mm); e, *A. serratus*, blotched colour variety (230 mm).

from other Australian members on the basis of its relatively large scales (20-26 in a diagonal row from the upper origin of gill cover to the base of the first dorsal spine) and leopard-like colour pattern of spots, blotches and lines. *A. cinctus*, *A. ocellatus* and *A. serratus* all possess smaller scales (26-35) and colour patterns as described in the key above. *A. pardalotus* particularly differs from its sympatric species *A. serratus*, by possessing less vertical scale rows above the lateral line (99-105 as against 110-137 respectively), and stronger serrations on the scales producing a coarser feel than that experienced with *A. serratus*. *A. cinctus* also possesses a similar coarseness of its scales but as well as having a totally different colour pattern, its longest dorsal spine is considerably shorter than that of *A. pardalotus* (2.9-3.2 in head length, as against 2.1-2.5 respectively, for specimens of 128 mm SL and less).

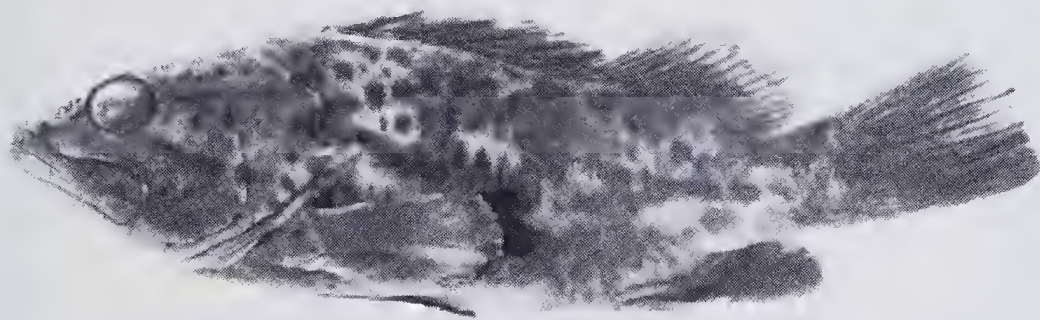


Fig. 2: *Acanthistius pardalotus* sp. nov., holotype, WAM P.5113, 189 mm SL.

Description

Measurements and counts of holotype and selected paratypes are presented in Table 1.

Dorsal rays XIII, 14-15; anal rays III, 8; pectoral rays 17-18; lateral line pores to caudal base 50-56; vertical scale rows from upper origin of gill opening to base of caudal fin 99-106; scales in diagonal row from upper origin of gill opening to base of first dorsal spine 20-26; scales in diagonal row from origin of first anal spine to lateral line 48-60; gill rakers (including rudiments) on lower half of first gill arch 11-13.

Greatest body depth 2.6-3.1, head length 2.4-2.6, snout to origin of dorsal fin 2.7-3.0, lower lip to origin of anal fin 1.2-1.8, postorbital length of head 3.7-4.3, length of spinous dorsal base 2.8-3.5, length of soft dorsal base 3.9-4.7, all in standard length. Snout 4.2-4.7, eye 3.9-6.1, least width of bony interorbital 5.5-8.3, least depth of caudal peduncle 3.0-3.7, length of caudal peduncle 2.0-2.7, length of pectoral fin 1.5-1.8, length of pelvic fin 1.6-2.3, length of longest dorsal spine (4th-5th) 2.0-3.0, length of longest dorsal ray (3rd-5th) 2.2-3.2, length of longest anal spine (2nd) 2.4-3.7, length of

TABLE 1

Measurements in mm and counts of selected type specimens of *Acanthistius pardalotus*.

	Holotype		Paratypes			
	WAM P.5113	WAM P.14532	WAM P.26664-004	WAM P.3784	WAM P.26825-001	WAM P.26825-001
Standard length	189	370	277	236	118	94
Head length	79	159	114	98	50	40
Snout length	18	38	26	23	11	8.9
Eye diameter	16	26	21	18	12	9.9
Interorbital width	12	29	19	14	6.8	5.1
Postorbital length of head	48	101	71	60	28	23
Greatest depth of body	61	140	104	88	40	33
Least depth of caudal peduncle	23	43	36	28	14	11
Length of caudal peduncle	31	63	53	41	22	19
Snout to origin of dorsal fin	74	137	103	81	43	32
Lower lip to origin of anal fin	38	281	210	178	95	76
Length of spinous dorsal base	60	115	100	72	34	30
Length of soft dorsal base	43	89	63	58	28	22
Length of pectoral fin	45	88	68	56	30	24
Length of pelvic fin	39	70	53	49	27	21
Length of longest dorsal spine	35	55	43	38	24	20
Length of longest dorsal ray	33	55	45	39	23	16
Length of longest anal spine	27	48	34	30	20	16
Length of longest anal ray	37	66	53	46	20	15
Length of caudal fin	43	77	60	53	29	23
Dorsal fin count	XIII, 15	XIII, 15	XIII, 15	XIII, 15	XIII, 15	XIII, 15
Anal fin count	III, 8	III, 8	III, 8	III, 8	III, 8	III, 8
Pectoral fin count	18	18	18	18	18	18
Lateral line count	55	50	55	53	54	56
Vertical scale rows above lateral line	105	100	100	99	103	105
Scales above lateral line	21	21	25	25	20	22
Scales below lateral line	52	59	48	53	52	52
Number of gill rakers	—	13	11	13	13	13

longest anal ray (3rd-4th) 2.0-2.7, length of caudal fin 1.6-2.1, all in head length.

Interorbital space flat to slightly concave; maxilla reaching level below posterior half of eye to slightly behind; opercle with three spines, middle spine much closer to lower than upper one; opercular flap pointed; preopercular margin rounded, upper limb coarsely serrate (lowermost serration somewhat larger than rest), three strong recurved spines on lower limb; scales on head and body (except breast and preopercle) mostly ctenoid, those on head and anterior portion of back becoming less serrate with increasing SL; predorsal scales extend forward to posterior nostrils; outer row of small conical acute teeth in both jaws, and an inner band of villiform teeth separated at the symphysis (some symphysial teeth in upper jaw more cardiform), a V-shaped band of villiform teeth on vomer and a band of similar teeth on each palatine.

Colour of holotype in alcohol: head and body pale brown with a leopard-like pattern of spots, blotches and lines; three narrow lines radiate rearwards from margin of posterior half of eye, uppermost parallel to and just below upper profile of head, central one to upper margin of gill opening and lowermost to above angle of preoperculum; fins brown with indication of darker blotches on basal portion of dorsal fin. Paratypes as above with the following exceptions: spots, blotches and lines become more numerous and smaller with increasing SL, as well as the leopard-like pattern becoming more complex; occasionally only two lines (rarely one) radiate from posterior half of eye and, as in the case of the largest paratype (WAM P.14532, 370 mm SL), these lines may be irregular and difficult to distinguish from the surrounding pattern of spots and blotches; ground colour varies from pale grey to brown.

Colour in life (based on colour transparencies of live fish underwater): head, body and fins pale greyish green with a leopard-like pattern of blackish brown spots, blotches and lines, the spots on fins somewhat lighter in colour; margins of fins greyish blue and unspotted.

Distribution

Acanthistius pardalotus is confined to subtropical waters of Western Australia, from Prevelly Park, just north of Cape Leeuwin, northwards to Point Quobba, just north of Carnarvon. Its range partly overlaps that of *A. serratus*, a temperate species (Ceduna, South Australia [see Glover & Branden, 1978: 57] to Kalbarri, Western Australia).

Remarks

Like *A. serratus*, *A. pardalotus* spends its juvenile life stage in shallow coastal rocky areas, including intertidal rock pools. The adult generally

occurs on reefs to depths of 36 m where it shelters in caves during the day-time.

This species is named *pardalotus* (from the Greek word meaning 'spotted like a leopard') with reference to its characteristic colour pattern.

Together with both *A. serratus* and *A. ocellatus*, *A. pardalotus* has been referred to in the vernacular as 'Wirrah'. It is here suggested that the following common names be employed to separate the four Australian species of *Acanthistius*:

A. serratus — Western Wirrah

A. ocellatus — Eastern Wirrah

A. pardalotus — Leopard Perch

A. cinctus — Yellow-banded Perch (after Doak, 1972)

Additional material examined

Acanthistius cinctus, 4 specimens, 53-128 mm SL (all at AMS): I.16250-024, 128 mm SL, Seal Rocks, New South Wales, 24 May 1972; I.17360-021, 109 mm SL, Lord Howe Island, February 1973; I.20095-013, 53 mm SL, Arrawarra Headland, New South Wales, 4 May 1977; I.20262-007, 104 mm SL, Duncombe Bay, Norfolk Island, 10 September 1975.

Acanthistius ocellatus, 20 specimens, 18-212 mm SL (unless otherwise designated, all at AMS): I.10697, 128 mm SL, Lord Howe Island, April 1910; I.16848-001, 3 specimens, 18-86 mm SL, Jervis Bay, New South Wales, 24 June 1971; I.20833-003, 5 specimens, 67-135 mm SL, Arrawarra Headland, New South Wales, 4 May 1977; WAM P.26781-001, 212 mm SL, Wynyard, Tasmania, September 1979; P.26827-001, 11 specimens, 21-133 mm SL, Seal Rocks, New South Wales, 18 August 1970.

Acanthistius pardalotus: WAM P.12161, 253 mm SL, Houtman Abrolhos, Western Australia, 29 March 1965.

Acanthistius serratus, 21 specimens from Western Australia, 17-317 mm SL (all at WAM): P.28, 210 mm SL, Garden Island, 11 March 1912; P.652, 123 mm SL, Garden Island, 22 April 1918; P.680, 280 mm SL, 30 January 1920; P.3383, 246 mm SL, Cottesloe, 2 January 1951; P.4255, 284 mm SL, Lancelin, 2 October 1958; P.7582, 268 mm SL, Albany, 3 June 1964; P.14534, 230 mm SL, Garden Island, November 1959; P.15683, 239 mm SL, Fremantle Harbour, 20 January 1967; P.21800, 238 mm SL, Denmark, 25 July 1972; P.23399, 235 mm SL, Bunker's Bay, July 1973; P.25096-001, 317 mm SL, Yallingup, September 1974; P.25765-001, 164 mm SL, Recherche Archipelago, 9 April 1977; P.25195-006, 2 specimens, 48-56 mm SL, Cape Naturaliste, 17 March 1975; P.25256-003, 4 specimens, 17-78 mm SL, Geographe Bay, 26 April 1975; P.26545-003, 2 specimens, 69-89 mm SL, Augusta, 2 February 1979, P.26826-001, 114 mm SL, Kalbarri, 14 November 1957.

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